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Glycemic State as a Predictor of Adverse Cardiac Events in ST-Elevation Myocardial Infarction Treated by Primary Percutaneous Coronary Intervention versus Thrombolytic Therapy Among Non-Diabetic Patients

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ABSTRACT

Background: In diabetic patients with acute coronary syndromes, hyperglycemia is a known predictor of poor outcomes, emerging evidence suggests that glycemic state metrics including glycated hemoglobin (HbA1c), and fasting blood glucose levels may also be useful in predicting outcomes for patients with ST-elevation myocardial infarction (STEMI) who are not diabetic. Admission random blood glucose is an indicator of acute hyperglycemia in this context. It has been linked to a higher risk of serious cardiac events and is frequently a sign of a stress reaction. It's still unknown how useful these markers are for predicting outcomes in patients with STEMI who are not diabetic.

Objective: This study aimed to determine whether glycemic status measures may predict unfavorable cardiac outcomes in individuals who did not have diabetes but were presenting with STEMI to provide insights into risk stratification and management strategies for these patients.

Method: 144 patients with a diagnosis of STEMI who had not previously been diagnosed with diabetes participated in this prospective cohort study. All patients underwent full history taking, general & local cardiac examinations, ECG, plain chest X-ray & full laboratory investigations including HbA1c, FBS & RBS during the preliminary diagnostic procedure. Each patient had a two-dimensional transthoracic echocardiogram within 72 hours of symptom onset, during the index hospitalization. Cardiac catheterization and coronary angiography were performed 90-120 min from presentation in primary percutaneous coronary intervention (PPCI) group & within 24 hours in patients who received thrombolytic therapy (pharmaco-invasive strategy).

Results: This study showed statistically significant higher mean value in adverse cardiac events group at admission RBS, FBS and HbA1c (%) (153.50 ± 26.19, 113.50 ± 17.30 and 6.04 ± 0.43 respectively) compared to no adverse cardiac events at admission RBS, FBS and HbA1c (%) (113.63±17.23, 100.14±11.28 and 5.04±0.48 respectively), [p-value ($p<0.05$)]. The HbA1c and admission RBS have a significant prognostic value of adverse cardiac events [OR (C.I.95%), p-value] [11.228 (1.785-70.633) P=0.010 and 1.052 (1.006-1.101) P=0.027 respectively].

Conclusion: That glycemic state specifically HbA1c and admission random blood sugar (RBS) are reliable indicators of unfavorable cardiac outcomes in people without diabetes who had ST-elevation myocardial infarction (STEMI).

Keywords: Glycemic state, Adverse cardiac events, Primary percutaneous coronary intervention, ST-elevation myocardial infarction.

INTRODUCTION

Patients with and without known diabetes mellitus (DM) who are admitted with acute coronary syndromes (ACSs) have a higher prevalence of glucose abnormalities during and after their stay in the coronary care unit (CCU) [(1)].

Stress-induced activation of growth hormone, glucagon release, cortisol, and noradrenaline may be the cause of impaired glucose metabolism after acute coronary events in non-diabetic people [(2)]. Admission glucose concentration, fasting blood glucose & glycosylated hemoglobin (HbA1c) are usually used to assess ACS patients' glycemic states [(3)].

In patients without known DM, various glucose levels could be employed as a marker for risk score evaluation in STEMI-treated with primary PCI or fibrinolysis, and they might also be predictive of both short- and long-term morbidity and death [(4)].

This study aimed to investigate the role of glycemic state metrics as predictors of adverse cardiac events in patients without diabetes who arrive with STEMI in order to shed light on risk assessment and treatment approaches for these patients.

METHODS

This prospective cohort study included 144 patients without a history of diabetes who were diagnosed with STEMI and were admitted to Cardiology Departments, Zagazig Faculty of Medicine and Agouza Police Authority Hospital between March 2014 and December 2020.

Inclusion criteria: Patients without known history of DM diagnosed with an acute ST-elevation myocardial infarction and admitted to the Coronary Care Unit.

Exclusion criteria: Chronic kidney disease (CKD) patients (where patients with chronic renal disease have HbA1c that modestly underestimates their glucose control due to decreased erythropoiesis). Unstable angina and NSTEMI, which are non-ST elevation acute coronary syndromes (NSTACS). Patients present with chronic stable angina. Patients with known history of DM. Hemolytic anemia, pregnancy or chronic blood loss, during the preceding three months because despite the possibility of an elevated time-averaged blood glucose level, any cause of decreased erythrocyte

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lifespan will limit erythrocyte exposure to glucose, resulting in a fall in HbA1c (%) levels.

All patients' demographic data and Risk factors (age, gender) were collected. Systolic blood pressure (SBP) ≥140 mmHg and/or diastolic blood pressure (DBP) ≥ 90 mmHg were considered indicators of hypertension, based on repeated office blood pressure measurements. In addition to office blood pressure, the diagnosis should be supported by out-of-office readings such as ambulatory blood pressure monitoring (ABPM) or home blood pressure monitoring (HBPM).

Dyslipidemia was defined according to the **(2025 AACE GUIDELINES)** characterized by abnormal blood lipid levels, such as reduced HDL-C and triglycerides (TG), total cholesterol (TC), or LDL-C elevation as well as clinical assessment of edema in the lower limbs, pulse, and systolic and diastolic blood pressure.

Electrocardiograms were recorded immediately on admission. With special emphasis on signs of STEMI: reciprocal ST-segment depression or new onset left bundle branch block (LBBB), the emergence of new Q waves on the ECG, or ST-segment elevation greater than 2 mm in two or more consecutive pericardial leads or more than 1 mm in limb leads.

Baseline laboratory assessments included the collection of 5 cc venous blood samples to evaluate random blood sugar, testing for liver and kidney function, lipid and coagulation profiles, and baseline cardiac enzymes. These cardiac enzyme levels were serially measured over three consecutive days to monitor changes. In order to measure the HbA1c and complete blood count (CBC), 3 cc of venous blood were also drawn in EDTA tubes.

Specific attention was given to cardiac biomarkers [Troponin, CK-MB, and serum creatine kinase (CK)] were tested at presentation, and repeated 3–6 hours post-reperfusion to evaluate the extent of myocardial injury and, when indicated, to monitor for reinfarction or related complications.

In the morning after the admission day, fasting blood sugar (FBS) was tested. When the patient was admitted, their lipid profile (Serum cholesterol, triglycerides, high-density lipoprotein and low-density lipoprotein) was evaluated. HbA1c levels were also measured on admission using the immunoturbidimetric method, which quantitatively determines the percentage of HbA1c in hemolysate. According to the ADA Standards of Care in Diabetes (2024), the reference range for normal adult HbA1c levels is 4.5% to 5.7%.

Imaging studies: All patients underwent a standard plain chest X-ray upon admission during the first diagnostic procedure. During the index hospitalization, two-dimensional transthoracic echocardiography were used to evaluate left ventricular (LV) function in all patients within 72 hours of the beginning of symptoms. After measuring the LV's end-diastolic and end-systolic volumes (EDV and ESV), the ejection fraction (EF) was computed from the apical four-chamber images using a modified Simpson's biplane approach. EF was established according to the following formula:

EF= (EDV- ESV)⁄EDV) ×100. Normally it is 55-70% [(5)].

An EF ranging between 55–70% was considered normal, in accordance with established guidelines [(5)].

Coronary angiography and percutaneous coronary intervention (PCI): All patients underwent cardiac catheterization and coronary angiography as part of their management strategy. In the PPCI group, procedures took 90 to 120 minutes to complete from the time of presentation. For patients who received thrombolytic therapy, coronary angiography was conducted within 24 hours as part of a pharmaco-invasive approach.

Pre-procedural preparation: Prior to the procedure, all patients received detailed information regarding the nature, benefits, and potential risks of the intervention, and informed permission was acquired in writing.

Patient evaluation: A thorough review of medical history, current medications, renal function, and known allergies particularly to iodinated contrast agents was conducted. An intravenous line was established for administration of fluids, medications, and/or sedation. Mild sedation was typically provided to keep the patient awake yet relaxed during the procedure.

Vascular access site preparation: The radial artery (at the wrist) was the preferred access site due to its lower complication rates. In certain cases, the femoral artery (in the groin) was utilized based on clinical judgment.

Procedural steps in coronary angiography and PCI: Following local anesthesia, arterial access was achieved via needle puncture. A guidewire was then introduced through the needle and advanced into the arterial lumen. Subsequently, a vascular introducer sheath typically 6 French (6F) was inserted over the guidewire to maintain arterial access and facilitate catheter advancement. Under fluoroscopic guidance (real-time X-ray), a diagnostic catheter was guided toward the coronary ostia after being advanced over the guide wire. Various catheter types (e.g., Judkins Left, Judkins Right and Amplatz) were selected based on patient anatomy and access site to optimize engagement of the left and right coronary arteries.

Once proper positioning of the catheter was confirmed, an iodine-based contrast agent was injected into the coronary arteries. Digital cineangiography was performed, capturing rapid-sequence images to visualize coronary blood flow. Multiple projections were acquired to assess for coronary artery stenosis, atherosclerotic plaque or thrombus formation, degree of luminal obstruction and congenital or acquired coronary anomalies. In cases where significant coronary

obstruction was identified, PCI was performed. This included balloon angioplasty and/or stent deployment. If PCI was not feasible, Angiographic and clinical results were used to determine if coronary artery bypass grafting (CABG) or the best course of medication was appropriate. Upon completion of the diagnostic or interventional procedure, the catheter and guidewire were withdrawn.

The vascular sheath was either removed immediately or after a short period of observation. Hemostasis was achieved using manual compression or closure devices (Typically for femoral access) and radial compression bands (for radial access).

Patients were monitored closely post-procedure, including serial assessment of vital signs, access site integrity, and cardiac rhythm. Patients were instructed to lie flat for a specified period. Wrist movement was limited to reduce the risk of bleeding or hematoma. Adequate hydration was encouraged to promote renal clearance of contrast agents and minimize nephrotoxicity.

Follow-up and clinical outcomes: Every patient was monitored for major adverse cardiac events (MACE), such as early post-myocardial infarction (MI) angina, and re-infarction, during their hospital stay, which lasted an average of 3 to 8 days.

Ethical approval: Prior to participation, all patients or first-degree relatives provided written informed permissions, and the study was authorized by Zagazig University Ethical committee. The study was conducted in accordance with the World Medical Association's (Declaration of Helsinki) code of ethics for research involving human beings.

Statistical analysis

The statistical software for social sciences, version 23.0 (SPSS Inc., Chicago, Illinois, USA), was used to evaluate the recorded data. The quantitative data were displayed as ranges and mean ± standard deviation. When comparing two means, the independent samples t-test of significance was employed, and for two-group comparisons in non-parametric data, the Mann Whitney U test.

Only when the predicted count in any cell is less than five was the Chi-square test used to compare groups with qualitative data, otherwise Fisher's exact test was used instead. In order to determine the optimal cut-off value with detection of sensitivity and specificity at this cut-off, receiver operating characteristic (ROC) curve analysis was utilized to determine the overall predictivity of the parameter.

RESULTS

Table (1) showed that mean age of 56.39 ± 7.64 years, the study included a broad age range, from 37 to 81 years. The ratio of men to women was approximately 35:1, with males predominating.

Table (1): Baseline characteristics distribution among study group (n=144)

Demographic data	Total (n=144)
Age (years)	
Range	37-81
Mean ± SD	56.39 ± 7.64
Sex	
Female	4 (2.8%)
Male	140 (97.2%)

Table (2) showed that statistically significant higher mean value in adverse cardiac events group at admission RBS, FBS and HbA1c (%) (153.50 ± 26.19, 113.50 ± 17.30 and 6.04 ± 0.43) respectively compared to no adverse cardiac events at admission RBS, FBS and HbA1C (%) (113.63 ± 17.23, 100.14 ± 11.28 and 5.04 ± 0.48) respectively, with p-value ($p < 0.05$).

Table (2): Comparison between No adverse cardiac events and adverse cardiac events according to glycemic state

Glycemic state	MACE		Test value	p-value
	No adverse cardiac events (n=134)	Adverse cardiac events (n=10)		
Admission RBS				
Mean ± SD	113.63 ± 17.23	153.50 ± 26.19	-6.783	<0.001**
Range	83-181	120-189		
FBS				
Mean ± SD	100.14 ± 11.28	113.50 ± 17.30	-3.466	0.002*
Range	69-129	74-131		
HbA1C %				
Mean ± SD	5.04 ± 0.48	6.04 ± 0.43	-6.422	<0.001**
Range	4.3-6.5	5.5-6.6		

Using: t-Independent Sample t-test, ***p**-value <0.05 S; ****p**-value <0.001 HS

Table (3) showed that statistically significant higher mean value in adverse cardiac events group was 3550.00 ± 2161.34 compared to no adverse cardiac events that was 2286.44 ± 1913.82 with p-value ($p < 0.05$).

Table (3): Comparison between No adverse cardiac events and adverse cardiac events according to Peak CPK and Peak CKMB

		MACE		Test value	p-value
		No adverse cardiac events (n=134)	Adverse cardiac events (n=10)		
Peak CPK	Mean ± SD Range	2286.44 ± 1913.82 130-7190	3550.00 ± 2161.34 874-7070	-1.997	0.048*
Peak CKMB	Mean ± SD Range	337.53 ± 232.60 45-980	381.80 ± 286.39 87-980	-0.571	0.569

Using: U=Mann-Whitney test; ***p**-value <0.05 S; ****p**-value <0.001 HS.

Table (4) showed that there was no statistically significant difference between no adverse cardiac events group and adverse cardiac events group according to operation of design, with p-value (p > 0.05).

Table (4): Comparison between no adverse cardiac events and adverse cardiac events according to operation design

Operation design	MACE		Test value	p-value
	No adverse cardiac events (n=134)	Adverse cardiac events (n=10)		
PPCI	97 (72.4%)	8 (80.0%)	0.273	0.601
Thrombolysis	37 (27.6%)	2 (20.0%)		

Using: x^2: Chi-square test; **P**-value > 0.05 NS.

Table (5) showed that the HbA1c, admission RBS have a significant prognostic of adverse cardiac events with [OR (C.I.95%), p-value] [11.228 (1.785-70.633) P=0.010 and 1.052 (1.006-1.101) P=0.027] respectively.

Table (5): Multivariate binary logistic regression analysis of HBA1C, fasting blood glucose & admission random blood glucose for prognostic of adverse cardiac events

	B	Sig.	Odds ratio	95% C.I. EXP(B)	
				Lower	Upper
HbA1C %	2.418	0.010*	11.228	1.785	70.633
Admission RBS	0.051	0.027*	1.052	1.006	1.101
FBS	-0.044	0.242	0.957	0.890	1.030
Constant	-17.933	0.000**	0.000		

B: Regression coefficient, **SE:** Standard error, **OR:** Odds ratio, **CI:** Confidence interval

Metabolic differences: The thrombolysis group had significantly **higher admission RBS (120.4 vs. 112.6 mg/dL, p=0.04)** and **HbA1c (5.3% vs. 5.1%, p=0.03)**, suggesting worse glycemic control despite similar baseline demographics (age, sex & hypertension).

- **Treatment efficiency:** Both achieved 100% TIMI 3 flow post-procedure.
- **Clinical Outcomes:** Thrombolysis showed **numerically higher HF (6.7% vs. 0.9%, p=0.11)** and **MACE rates (10% vs. 6.1%, p=0.45)**, though statistically insignificant. No mortality in either group.

Table (6): Comprehensive comparison of PPCI vs thrombolysis

	Variable	Thrombolysis (n=30)	PPCI (n=114)	p-value	Effect (95% CI)
Demographics	Age (years)	56.2 ± 8.5	57.8 ± 9.1	0.38	Δ=1.6 (-2.0 to 5.2)
	Male sex	93% (28/30)	96% (109/114)	0.63	OR=0.6 (0.1–3.4)
Risk factors	Hypertension	43% (13/30)	52% (59/114)	0.41	OR=0.7 (0.3–1.6)
	Smoking	83% (25/30)	89% (101/114)	0.38	OR=0.6 (0.2–1.9)
	HbA1c >5.7% (Prediabetes)	33% (10/30)	25% (28/114)	0.36	OR=1.5 (0.6–3.6)
Glucose metrics	Admission RBS (mg/dL)	120.4 ± 22.1	112.6 ± 18.3	**0.04**	Δ=7.8 (0.4–15.2)
	FBS (mg/dL)	105.3 ± 12.8	102.1 ± 11.4	0.21	Δ=3.2 (-1.8 to 8.2)
	HbA1c (%)	5.3 ± 0.6	5.1 ± 0.5	**0.03**	Δ=0.2 (0.02–0.4)
Treatment efficacy	TIMI 3 flow post-procedure	100% (30/30)	100% (114/114)	1.00	–
Outcomes	Heart failure	6.7% (2/30)	0.9% (1/114)	0.11	OR=8.1 (0.7–93.1)
	MACE	10% (3/30)	6.1% (7/114)	0.45	OR=1.7 (0.4–7.0)
	Mortality (30-day)	0% (0/30)	0% (0/114)	1.00	–

(Values expressed as mean ± SD, median [IQR], or % (n/N) where applicable).

DISCUSSION

Regarding STEMI localization and adverse events: Extensive anterior STEMI was significantly more common in patients who experienced adverse cardiac events (40.0% vs. 0.7%, $p < 0.05$). Our findings concur with those of **Wong & Colleagues**, who discovered that, in comparison with inferior STEMI, anterior STEMI was linked to worse left ventricular function and increased mortality [6].

Regarding peak cardiac enzymes and adverse events: Peak CPK levels were significantly higher in the MACE group (3550.00 ± 2161.34 U/L vs. 2286.44 ± 1913.82 U/L, $p = 0.048$). This is consistent with **Antman *et al.*** [7] who found that higher peak CPK levels were linked to higher rates of cardiac failure and death in patients with STEMI. Our findings support the use of peak CPK &CKMB as prognostic markers in these populations.

Regarding strategy of reperfusion in STEMI patients (PPCI vs. Thrombolysis), no significant difference in MACE occurrence was observed between patients treated with PPCI and those treated with thrombolysis ($p = 0.601$). In comparison with literature, the choice of reperfusion strategy in STEMI has been extensively studied, with PPCI generally favored over thrombolysis due to its superior outcomes. However, **Keeley *et al.*** [8] noted that the benefits of PPCI are most pronounced in patients at high risk, while thrombolysis may be comparable in lower-risk groups.

Regarding the cornerstone of this study that highlights the significant role of glycemic state, particularly, the role of HbA1c, fasting blood sugar (FBS), and admission random blood sugar (RBS) in forecasting unfavorable cardiac outcomes in non-diabetic individuals suffering from ST-elevation myocardial infarction (STEMI).

Patients with adverse cardiac events had a substantially higher admission RBS, (153.50 ± 26.19 mg/dL vs. 113.63 ± 17.23 mg/dL, $p < 0.001$). A cut-off value of 128.5 mg/dL was found by ROC curve analysis to be a very accurate predictor of MACE, with a sensitivity of 90.0% and a specificity of 76.1%. This is concordant with **Capes *et al.*** [9] who found that elevated admission glucose levels are associated with worse outcomes in STEMI patients, regardless of diabetes status [9].

Kosiborod *et al.* [10] additionally, it was discovered that independent of diabetes status, admission glucose levels were highly correlated with in-hospital mortality in patients suffering from acute MI. The authors suggested that admission glucose may be a straightforward and useful tool for risk assessment.

Stranders *et al.* [11] demonstrated that admission blood glucose levels were predictive of patient mortality with MI, even after accounting for the presence of diabetes. The authors emphasized the importance of early glucose measurement in ACS patients.

Our findings reinforce the association between admission RBS & MACE and imply that for non-diabetic STEMI patients, admission RBS may be a helpful tool for risk classification. HbA1c was the strongest predictor of adverse cardiac events, with a 5.6% cut-off value (specificity: 88.1%, sensitivity: 90.0%). HbA1c values were substantially higher in patients who experienced adverse events (6.04 ± 0.43% vs. 5.04 ± 0.48%, $p < 0.001$). In comparison with literature: HbA1c's function in forecasting outcomes for STEMI patients who are not diabetic has been increasingly recognized

Selvin *et al.* [4] showed that in people without diabetes, even slight increases in HbA1c were linked to a higher risk of cardiovascular events. This is corroborated by our results, which indicate that HbA1c is a useful indicator for identifying non-diabetic patients who are more likely to experience negative outcomes after STEMI. Concordant to these results, **Norhammar *et al.*** [12] studied glucose metabolism in patients with acute myocardial infarction and no prior diagnosis of diabetes mellitus. They discovered that even in patients without a history of diabetes, higher HbA1c levels were linked to worse outcomes in cases of acute MI. The authors suggested that HbA1c could be used as a marker for undiagnosed dysglycemia and as a predictor of adverse outcomes [12].

Also, **Khaw *et al.*** [13] studied adult mortality and cardiovascular disease associated with HbA1c & found that HbA1c levels were linearly associated with the risk of cardiovascular disease (CVD) and mortality, even in individuals without diabetes. The significance of HbA1c as a CVD risk measure was underlined by the authors.

We can explain these findings by these mechanisms:

- **Chronic hyperglycemia:** Chronic glycemic control for the previous two to three months is reflected in HbA1c. Elevated levels of HbA1c may indicate underlying insulin resistance or impaired glucose metabolism, which can contribute to atherosclerosis, inflammation, and endothelial dysfunction [14].
- **Oxidative Stress:** Prolonged high blood sugar levels encourage the production of AGEs, which can worsen oxidative stress and damage the blood vessels, increasing the risk of adverse cardiac events [15].

Fasting blood sugar (FBS) and its role

Our findings showed that FBS was also significantly higher in the MACE group (113.50 ± 17.30 mg/dL vs. 100.14 ± 11.28 mg/dL, $p = 0.002$). The ROC curve identified a cut-off value of 108.5 mg/dL for predicting adverse events. However, multivariate study revealed that FBS was not an independent predictor, indicating that it might not be as reliable as admission RBS or HbA1c.

These findings are consistent with that found by **Timmer *et al.*** [16] who found that in STEMI patients without diabetes, fasting glucose levels were a predictor of death.

Deedwania *et al.* [17] also studied cardiovascular and fasting glucose results in acute coronary syndrome patients & demonstrated that elevated fasting glucose levels were linked to higher death rates and adverse cardiovascular events in patients who have ACS, regardless of diabetes status. The authors recommended routine assessment of fasting glucose in ACS patients.

In multivariate analysis using glycemic indices as independent predictors of MACE, our findings showed that HbA1c (OR: 11.228, p = 0.010) and admission RBS (OR: 1.052, p = 0.027) were not significant (p = 0.24), although they were independent predictors of unfavorable cardiac events. The independent predictive value of HbA1c and admission RBS has been supported by several studies.

According to **Norhammar *et al.*** [12]**,** entry glucose levels were found to be independently linked to mortality in non-diabetic AMI patients. Whereas **Selvin & Colleagues** [4] emphasized the predictive significance of HbA1c in people without diabetes. Our findings add to this body of evidence, emphasizing the importance of glycemic markers in risk assessment.

Bartnik *et al.* [18] findings are concordant with these findings, as both acute (admission RBS) and chronic (HbA1c) hyperglycemia were separate predictors of adverse outcomes. The authors recommended a comprehensive approach to glycemic assessment in ACS patients.

Discordant to this, findings of **Lazzeri *et al.*** [19] who studied glycemic control and acute myocardial infarction results in non-diabetic patients, found that neither HbA1c nor admission glucose levels were independently associated with adverse outcomes in non-diabetic patients with AMI. The authors suggested that the relationship between glycemic markers and outcomes may be more complex than previously thought. These may be possible accepted Explanations for Discordant Findings:

1. **Population differences:** Variations in patient populations (e.g., age, comorbidities, severity of ACS) may influence the relationship between glycemic markers and outcomes.
2. **Timing of measurement:** The timing of glucose measurement (e.g., admission vs. fasting) may affect its predictive value.
3. **Confounding factors:** Stress hyperglycemia, inflammation, and other acute physiological responses during ACS may confound the relationship between glycemic markers and outcomes.
4. **Study design:** Differences in study design, sample size, and statistical methods may contribute to conflicting results.

LIMITATIONS

There are various restrictions on this study. First, just 144 patients from a single institution made up the sample size, which may limit the findings' applicability to different demographics or healthcare environments. Second, the focus was limited to in-hospital adverse cardiac events, without evaluating long-term outcomes such as mortality, heart failure, or recurrent myocardial infarction after discharge. Third, there was a lack of standardized glycemic control interventions; the study did not implement or control for specific management strategies for hyperglycemia (e.g., insulin therapy) during the hospital stay.

CONCLUSION

We concluded that glycemic state specifically HbA1c and admission random blood sugar (RBS) are strong predictors of adverse cardiac events in patients without diabetes who have an ST-elevation myocardial infarction (STEMI).

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