THE RATE OF DIABETES MELLITUS THAT WASN'T PREVIOUSLY FOUND IN PATIENTS WITH ACUTE CORONARY SYNDROME USING HBA1C

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Abstract
Objective: To determine the percentage of individuals with acute coronary syndrome (ACS) who have never been diagnosed with diabetes mellitus. Using HBA1c as parameter.
Study Design: A Cross-sectional Study
Place and duration of study: Department of Cardiology & Endocrinology   HMC Hospital Peshawar from 1st Jan 2022 to 1st jan- 2022
Methods: Out of 100 patients diagnosed with ACS and hospitalized with acute chest discomfort, participants were chosen for the research. Following a comprehensive history and physical examination, these individuals had an ECG, serum troponin-I level, haemoglobin level, and HbA1C tests. The patient's BMI, age, gender, and HbAlc level were recorded. Each patient's outcome (diabetes, prediabetes, and non-diabetic) was recorded.
Results: With a mean age of 52.07 years, 70% of the 100 participants were male. The HbA1c level was 4.11%±1.79% on average. STEMI (70.20%) was the most prevalent kind of ACS, followed by NSTEMI (22.81%). 8% of individuals had just received a diabetes mellitus diagnosis. According to statistical analysis, age, gender, or type of ACS did not significantly correlate with the diagnosis of diabetes mellitus. These results highlight the high rate of diabetes mellitus that goes undiagnosed in ACS patients, underscoring the need for early screening in this group.
Conclusion: The study emphasizes the need for proactive DM screening in this group by highlighting a high incidence of previously undetected DM among ACS patients. In individuals with ACS, early identification and treatment of DM may reduce cardiovascular risks and enhance therapeutic results. To enable prompt diagnosis and management of diabetes mellitus, healthcare practitioners should include HbA1c testing in regular evaluations for patients with ACS. This would eventually lower the morbidity and death rates linked to cardiovascular problems.

Keywords: Diabetes Mellitus, Acute Coronary Syndrome, HbA1c Testing, Undiagnosed

Introduction

A critical cardiovascular emergency, acute coronary syndrome (ACS), includes a range of disorders from unstable angina to myocardial infarction (MI), including both non-ST-elevation (NSTEMI) and ST-elevation (STEMI). With an anticipated 10.4 million cases globally each year, it poses a substantial global health burden (World Health Organisation, 2020). At the same time, 463 million persons worldwide suffer from diabetes mellitus (DM), which presents a significant threat to public health (International Diabetes Federation, 2019). There is ample evidence linking diabetes mellitus (DM) to coronary artery disease (ACS), with DM serving as a primary risk factor for the onset and advancement of CAD (Kannel et al., 1974). In addition, DM makes the adverse effects of ACS worse, such as increased mortality, recurrent ischemia events, and heart failure rates (Bartnik et al., 2004). Even with this apparent connection, a sizable fraction of patients with ACS may have undetected DM, which may have a significant impact on their prognosis and clinical care. Due to logistical limitations and variations in stress-induced hyperglycemia, traditional techniques of diagnosing diabetes mellitus, such as fasting plasma glucose (FPG) and oral glucose tolerance tests (OGTT), may not be feasible in the acute setting of acute coronary syndrome (ACS) (Kosiborod et al., 2005). As a result, the usefulness of haemoglobin A1c (HbA1c) testing as a DM diagnostic method in ACS patients is gaining attention. Convenience, consistency, and freedom from fasting are just a few benefits of using the HbA1c test, which measures average blood glucose levels over the previous two to three months (American Diabetes Association, 2020). By employing HbA1c testing, this research attempts to close the information gap on the incidence of undiagnosed DM in ACS patients. Through a cross-sectional study of ACS patients admitted to the Diabetes & Endocrinology & Cardiology Department at HMC Hospital in Peshawar, Pakistan, between July 1, 2020, and December 1, 2020, we aim to clarify the number of newly diagnosed cases of DM and investigate the clinical and demographic features of these patients. By gaining a thorough grasp of the frequency and therapeutic consequences of undetected diabetes mellitus in patients with atrial fibrillation (ACS), we want to contribute to clinical practice and emphasise the significance of proactive DM screening approaches in this high-risk group. These discoveries may improve risk assessment and direct treatment choices and eventually raise the prognosis for ACS patients with concomitant diabetes.

Methods:

From 1st Jan 2022 to 1st jan 2022, cross-sectional research was carried out at the HMC Hospital in Peshawar, Pakistan, in the Department of Diabetes & Endocrinology & Cardiology. A total of one hundred ACS patients who complained of severe chest pain were included. Demographic information (age, gender), clinical parameters, and an extensive assessment that included an ECG, serum troponin-I level, haemoglobin level, and HbA1c tests were recorded once the examination was complete. Using the proper tests and models, statistical analyses were conducted to determine the frequency of undiagnosed diabetes mellitus (DM) among patients with ACS and its correlation with clinical and demographic variables.

Data collection:

Participants with an acute coronary syndrome (ACS) diagnosis were chosen based on clinical presentation and admission criteria. Comprehensive assessments were carried out, which included testing for haemoglobin, serum troponin-I, ECG, and HbA1c. In order to do a statistical analysis and ascertain the prevalence of undiagnosed diabetes mellitus (DM), demographic data (age, gender) and clinical data were acquired.

Statistical Analysis:

The clinical and demographic features were compiled using descriptive statistics. Additionally, relationships and predictors of undiagnosed diabetes mellitus were investigated using inferential statistics, including regression models and chi-square tests.

Results :

The study included the assessment of 100 individuals who had acute coronary syndrome (ACS) at the HMC Hospital in Peshawar. The mean age was 52.07 years, and 70% of the population was male. The average level of hemoglobin A1c, or HbA1c, was 4.11%±1.79%. The most common kind of ACS (70.20%) was STEMI, followed by NSTEMI (22.81%). 8% of individuals had just received a diabetes mellitus diagnosis. Notably, statistical analysis showed no significant relationship between age, gender, or type of ACS and the diagnosis of diabetes mellitus. These results highlight the importance of screening for diabetes early in ACS patients.

Table 1: Demographic Characteristics of Study Participants

Characteristic	Value
Total Participants	100
Male (%)	70
Female (%)	30
Mean Age (years)	52.07 ± 4.85

Table 2: Clinical Characteristics of Study Participants

Characteristic	Value
Mean HbA1c Level	4.11% ± 1.79%
STEMI (%)	70.20
NSTEMI (%)	22.81

Table 3: Prevalence of Diabetes Mellitus among ACS Patients

Diabetes Status	Number of Patients
Newly Diagnosed	8
Known Diabetic	12
Non-Diabetic	07

Table 4: Association between Diabetes Mellitus and Demographic Factors

Factor	p-value
Age	p-005
Gender	p-005

Table 5: Association between Diabetes Mellitus and Type of ACS

ACS Type	p-value
STEMI	p-005
NSTEMI	p-005

Discussion

The findings of this investigation clarify the incidence of undetected diabetes mellitus (DM) in individuals suffering from acute coronary syndrome (ACS) and highlight the need for proactive screening approaches in this high-risk demographic.8% of individuals received a new diagnosis, indicating a high rate of undetected diabetes mellitus among ACS patients. This finding underscores a severe deficiency of clinical treatment. This emphasizes how important it is for ACS patients to have regular DM screenings, especially in light of the detrimental effects of DM on cardiovascular outcomes. Given that no statistically significant association is seen between DM diagnosis and age, gender, or type of ACS, all ACS patients should be subjected to DM screening, irrespective of their clinical or demographic features. The study's findings that STEMI is the most prevalent kind of ACS are consistent with other research that identified STEMI as a significant subtype of ACS (Thygesen et al., 2018). Even though it is less common, NSTEMI is nevertheless a clinically relevant subtype

that is linked to unfavorable outcomes and has to be taken into consideration while managing ACS. The study's mean HbA1c level of 4.11%±1.79% is within the range indicative of well-controlled diabetes mellitus (American Diabetes Association, 2020). However, the fact that some patients had undetected diabetes highlights the drawbacks of using HbA1c testing alone to identify diabetes, especially in the acute context of ACS. Thus, thorough DM screening methods, including several diagnostic modalities, may be necessary to guarantee prompt identification and treatment of DM in ACS patients. The fact that there is no discernible link between the diagnosis of DM and clinical or demographic characteristics highlights the complex process by which DM develops in ACS patients. This emphasizes the need for customized risk assessment and screening methods based on the distinct qualities of every patient. This research has many limitations, including a single-center design and a limited sample size that may restrict how broadly the results may be applied. More significant multicenter cohort studies are required to confirm these results and clarify the variables affecting the incidence of DM in ACS patients. In addition to highlighting the frequency of undetected diabetes mellitus (DM) in patients with advanced cancer (ACS), this research underscores the need for early screening to reduce cardiovascular risks and enhance patient outcomes.

Conclusion:

The study shows that among individuals with acute coronary syndrome (ACS), undiagnosed diabetic mellitus (DM) is much more common. The results highlight the significance of proactive DM screening in ACS patients despite the lack of strong correlations with demographic or clinical variables. Improved treatment results and reduced cardiovascular risks may be achieved by identifying and treating diabetes mellitus early on. To facilitate prompt identification and intervention, healthcare practitioners should integrate thorough diabetes mellitus screening regimens, which include haemoglobin A1c testing, into regular examinations for patients with ACS. This will eventually lower the morbidity and mortality linked to cardiovascular problems.

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