Prevalence of glucometabolic abnormalities in Patients with Acute Coronary Syndrome Without Previously Known Diabetes

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Abstract

Background

Patients with diabetes have an increased morbidity from acute myocardial infarction. The objective of this study was to characterize the glucometabolic profile during the hospital phase of patients with acute coronary syndrome without known of diabetes mellitus

Methods

A total of 80 patients with acute coronary syndrome and no previous diagnosis of diabetes. Patients consecutively admitted with acute coronary syndrome (ACS) in cerrahpasa faculty of medicine - coronary care unit were included. Glucometabolic status evaluated by a 75-g oral glucose tolerance test (OGTT) performed 5-10 days after admission of an ACS. Plasma glucose was measured at fasting, 60 minutes and 120 minutes after glucose load.

Results

The mean age was 58±13 years. Based on the OGTT, they were defined as having normal glucose tolerance (NGT; n = 31, 39%), impaired glucose tolerance (IGT; n = 28, %35), or diabetes (n = 21, %26).

Conclusion

The prevalence of abnormal glucose metabolism in patients with ACS is high. About 61% of the patients with ACS had undiagnosed impaired glucose tolerance or diabetes, as determined by an oral glucose tolerance test. The test could easily be performed shortly after diagnosis of ACS in all patients.

Keywords: hypertension; herbal remedy; vegetables;fruits; vitamin c

Introduction

Diabetes and impaired glucose tolerance are associated with increased mortality in patients with acute myocardial infarction. [1]. This risk is already apparent among people with pre-diabetic conditions, such as impaired glucose tolerance (IGT) [2]. Indeed, a systematic overview suggested an increased risk already at blood glucose levels well below the diabetic threshold [3]. In addition, there is a positive relation between blood glucose at hospital admission for an acute myocardial infarction and long-term mortality in patients with and without diabetes [4]. The Diabetes Insulin Glucose in Acute Myocardial Infarction study suggested that the glucometabolic state at admission, as indicated by blood glucose and HbA$_{1c}$, is a long-term risk marker in patients with diabetes and AMI [5]. Similar findings were made among patients without known diabetes [6-7].

The prevalence of previously undiscovered glucometabolic abnormalities such as diabetes and impaired glucose tolerance (IGT) has been shown to be high among patients with myocardial infarction. [8].

The objective of this study was to establish the prevalence of the glucometabolic profile of patients with ACS without any history of diabetes

Materials and methods

Study popluatios

Patients admitted to the coronary care units of cerrahpasa faculty of medicine for ACS were eligible for the study. Patients were included if admission capillary blood glucose at admission was less than 200 mg/dl and fastig bllod glucose less tan 126 mg/dl.

Exclusion criteria were known diabetes. admission was more than 200 mg/dl and fastig bllod glucose more tan 126 mg/dl or HbA1c more than 6.5%.

A 75-gram glucose load after fasting for 12 hours was performed for 80 ACS patients 5-10 days after hospital admission.

The patients were classified, according to WHO definitions from 1998, as having 120 min after the ingestion of glucose. Normal glucose tolerance (< 7.8 mmol/l), ımpaired glucose tolerance (7.8–11.0 mmol/l), or diabetes (> 11.1 mmol/l) (9).

Study protocol

Blood glucose was analyzed as soon as possible after admission to the coronary care unit. During hospitalization, HbA1c and FBG were measured on the first morning after admission. An OGTT with ingestion of 75 gram glucose dissolved in 200 ml water flavored with citric acid was performed according to WHO standards, including an FBG and a blood glucose measurement after 120 min (13), and in addition, a blood glucose value was obtained after 60 min. The OGTT was performed immediately 5-10 days before hospital discharge (usually on day 5) .

Statistical analysis

Values are presented as mean = SD, SPSS version 11.0 was used for all statistical analyses. A two-tailed P 0.05 was considered statistically significant.

Results

A 80 Patients (male, N= 55, 82.5% and female N=14, 17.5%) with mean age 58±13 years admitted to the coronary care units of cerrahpasa faculty of medicine for ACS between march 2002 and October 2003.

A 75-gram glucose tolerance test was performed in the morning after fasting for 12 hours for 80 ACS patients 5-10 days after hospital admission.

The result suggested that normal glucose tolerance (NGT; n = 31, 39%), impaired glucosetolerance (IGT; n = 28, %35), or diabetes (n = 21, %26).

OGTT result	Number of patients
Normal glucose tolerance	N = 31 , (39%)
impaired glucose tolerance	N= 28, (35%)
Diabetes	N=21, (26%)

Results of an OGTT in patients with ACS at 5-10 days after admission

Discussion

This study reveals that patients with an ACS and no previous diagnosis of diabetes have a high prevalence of abnormal glucose metabolism, about 61% of the patients with ACS had undiagnosed impaired glucose tolerance or diabetes, as determined by an oral glucose tolerance test. The test could easily be performed shortly after diagnosis of ACS in all patients without complications.

The present results on the prevalence of glucosetolerance amongst the ACS patients are in agreement with several recent reports. Meieret al., who performed an OGTT 3–4 weeks after a myocardial infarct diagnosed type 2 diabetes in 44% and impaired glucose tolerance in 24% of the patients (10). Thus, abnormal glucose tolerance was present in 61% of this sample (mean age 58 ± 13 years),

A systematic OGTT assessment of men with stable angina pectoris referred for coronary angiography (mean age 53 ± 9 years) disclosed abnormal glucose tolerance in 55% (type 2 diabetes 19%,impaired glucose tolerance 36%) of those in whom significant coronary artery disease was confirmed by angiography (11) . In a Korean study, an OGTT was conducted in patients without a prior history ofcoronary artery disease (mean age 62 ± 9 years)who were referred for coronary angiography before hospital discharge after an acute myocardial infarct(8%) or an episode of unstable (31%) or stable anginapectoris (55%) (12) Previously unknown abnormal glucose tolerance was detected in 76%.

Conclusions

Patients with ACS and no previous diagnosis of diabetes have a high prevalence of of abnormal glucose meabolism before hospital discharge. Readily available routine tests such as an OGTT or a single blood glucose value taken 60 min after ingestion of 75gram glucose at discharge predict the diagnosis of abnormal glucose tolerance. We recommend improved screening for dysglycemia in patients with ACS during hospital stay as a tool to initiate more aggressive management of dysglycemia, a frequent and presumably major risk factor in this category of patients.

Study Association

This study is part of the Cardiology Board thesis. Cerrahpasa faculty of medicine, Istanbul university, Istanbul, Turkey.

Limitation

Limitation in this study were the small sample size, and old study which is performed at 2003

Funding

None

Conflict of internet

No potential conflict of interest relevant to this study was reported

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