



ORIGINAL ARTICLE

Prediabetes and coronary artery disease: Outcome after revascularization procedures^{☆,☆☆}



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Received 21 September 2015; accepted 28 November 2015

Available online 17 March 2016

KEYWORDS

Prediabetes;
Coronary artery
disease;
Myocardial
revascularization;
Acute coronary
syndrome

Abstract

Objective: To assess the long-term association between prediabetes and an increased risk of cardiovascular events in patients with coronary artery disease and percutaneous coronary intervention (PCI).

Methods: A retrospective cohort study. We searched our database to identify all PCI procedures performed in 2010. Patients with no diabetes and HbA1c measurement in the index hospitalization were enrolled and divided into two groups based on HbA1c value: 5.7–6.5% for prediabetes and <5.7% for controls. Demographic, clinical, and procedure-related variables were recorded. Study endpoints were mortality, hospital admissions, myocardial infarction (MI), and revascularization procedures.

Results: The study population consisted of 132 subjects (82.6% males, age: 65.26 ± 12.46 years). No difference was found as regards distribution of demographic, clinical, and procedure-related variables. A majority (64.1%) of PCI procedures were performed for ST-segment elevation MI. Prevalence of prediabetes was 40.2%. After a mean follow-up period of 42.3 ± 3.6 months, no differences were found in outcomes between the prediabetes and control groups in total mortality (5.4% vs 1.9%; relative risk [RR] 2.86, 95% confidence interval [95% CI] 0.27–30.44; $p=0.56$), non-cardiovascular mortality (2.7% vs 1.9%; RR 1.43, 95% CI 0.93–22.18; $p=0.79$), hospital admissions (19% vs 25%; RR 1.13, 95% CI 0.73–1.73; $p=0.57$), MI (3% vs 1%; RR 4.28, 95% CI 0.46–39.52; $p=0.30$), or target lesion revascularization (3% vs 6%; RR 0.70, 95% CI 0.18–2.61; $p=0.72$).

[☆] Please cite this article as: Cueva-Recalde JF, Ruiz-Arroyo JR, García-Blanco FR. Prediabetes y pronóstico clínico de los pacientes con cardiopatía isquémica y revascularización coronaria percutánea. Endocrinol Nutr. 2016;63:106–112.

^{☆☆} This study was conducted in cooperation with the Department of Health Sciences Universidad Católica San Antonio in Murcia, in the setting of the Official Master in Cardiovascular Risk.

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PALABRAS CLAVE

Prediabetes;
 Síndrome coronario agudo;
 Revascularización coronaria;
 Intervencionismo coronario percutáneo

Conclusiones: Prediabetes, as determined by HbA1c (5.7–6.5%), is not associated with long-term adverse cardiovascular outcomes in patients with CAD and PCI.

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Prediabetes y pronóstico clínico de los pacientes con cardiopatía isquémica y revascularización coronaria percutánea

Resumen

Objetivo: Determinar si la prediabetes, a largo plazo, se asocia a un mayor riesgo de eventos cardiovasculares en pacientes con cardiopatía isquémica y revascularización coronaria percutánea.

Método.: Cohortes retrospectivo. De los procedimientos de revascularización realizados durante 2010 se seleccionaron aquellos sin diagnóstico de diabetes y con determinación de hemoglobina glucosilada. Se constituyeron 2 grupos: prediabetes (5,7-6,5%) y control (<5,7%). Se registraron variables demográficas, clínicas e intervencionistas. Los objetivos de estudio fueron mortalidad, ingresos hospitalarios, infarto de miocardio (IM) y procedimientos de revascularización.

Resultados: Los sujetos de estudio fueron 132 (hombres 82,6%; edad 65,26 ± 12,46). No se encontraron diferencias significativas en las variables demográficas, clínicas ni intervencionistas. La prevalencia de prediabetes fue 40,2%. El 64,1% de los casos de revascularización se debieron a IM con elevación de ST. Tras un seguimiento de 42,3 ± 3,6 meses no se encontraron diferencias entre prediabetes y control en mortalidad total: 5,4% vs 1,9% (riesgo relativo [RR]: 2,86, intervalo de confianza del 95% [IC 95%]: 0,27-30,44, p = 0,56), mortalidad no cardiovascular: 2,7% vs 1,9% (RR: 1,43, IC 95%: 0,93-22,18, p = 0,79), ingresos de cualquier causa: 19% vs 25% (RR: 1,13, IC 95%: 0,73-1,73, p = 0,57), IM: 3% vs 1% (RR: 4,28, IC 95%: 0,46-39,52; p = 0,30) ni revascularización de la lesión tratada: 3% vs 6% (RR: 0,70, IC 95%: 0,18-2,61, p = 0,72).

Conclusiones: En pacientes sometidos a revascularización coronaria la presencia de prediabetes, definida según valores de hemoglobina glucosilada, no se asocia a un incremento de eventos cardiovasculares a largo plazo.

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Introduction

Ischemic heart disease (IHD) is the most common cause of death worldwide, accounting for approximately seven million deaths annually, 12.8% of all deaths. In Europe, it is estimated that one out of every six men and one out of every seven women will die from IHD.¹ In Spain, IHD is the leading cause of death in men and the second leading cause of death in women. As regards morbidity, in 2010 there were 129,944 hospital discharges with a diagnosis of acute myocardial infarction (AMI).²

The most effective measure for coping with this health problem is cardiovascular prevention. Fifty percent of mortality reduction attributed to IHD is due to the detection and control of cardiovascular risk factors (CVRFs). When a patient develops the disease, however, effective treatment is needed, and most coronary lesions are treatable with percutaneous coronary interventions and stent implantation. The most common long-term complication of this procedure is stent restenosis.^{3,4} There are several associated factors. Thus, in registries of patients implanted conventional stents (bare-metal stent (BMS)), the variables inherent in coronary anatomy, the type of lesion, and the characteristics of

the procedure have been identified, including long lesions (>20 mm), the length of the implanted stent, small vessels (<3 mm), and bifurcation lesions.^{3,4}

There are also other associated conditions such as female sex, diabetes mellitus (DM), high blood pressure, the body mass index, chronic kidney disease, and multivessel coronary disease. An association with DM has been consistent in the different reports. Specifically, 30–50% restenosis has been shown with BMS, and although rates have decreased with the use of drug-eluting stents, diabetic patients continue to have a higher incidence of restenosis.⁵

These data reflect the impact of DM in this group, which is substantial considering that there are between 170 and 194 million people with DM. Its prevalence in Spain is 13.8%, and 11.6% are at risk of developing T2DM.^{6,7}

This last subgroup encompasses the so-called prediabetes.⁸ The diagnostic criteria for impaired glucose tolerance and impaired basal glucose have changed in recent decades,^{9,10} but in 2010 the American Diabetes Association recommended the use of glycosylated hemoglobin (HbA1c) levels ranging from 5.7% to 6.4% to define prediabetes.⁶ Epidemiologically, prediabetes represents a significant problem, because in 2010 there

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