Impact of Chronic Kidney Disease on Long-Term Outcomes in Type 2 Diabetic Patients With Coronary Artery Disease on Surgical, Angioplasty, or Medical Treatment

Eduardo Gomes Lima, MD, PhD, Whady Hueb, MD, PhD, Bernard J. Gersh, MB, ChB, DPhil, Paulo Cury Rezende, MD, Cibele Larrosa Garzillo, MD, PhD, Desiderio Favarato, MD, PhD, Alexandre Ciappina Hueb, MD, PhD, Rosa Maria Rahmi Garcia, MD, PhD, José Antonio Franchini Ramires, MD, PhD, and Roberto Kalil Filho, MD, PhD

Department of Clinical Cardiology, Heart Institute (InCor) University of São Paulo, São Paulo, Brazil; and Mayo Clinic Foundation, Rochester, Minnesota

Background. **Coronary artery disease (CAD) among patients with diabetes and chronic kidney disease (CKD) is not well studied, and the best treatment for this condition is not established. Our aim was to compare three therapeutic strategies for CAD in diabetic patients stratified by renal function.**

Methods. **Patients with multivessel CAD that underwent coronary artery bypass graft (CABG), angioplasty (percutaneous coronary intervention [PCI]), or medical therapy alone (MT) were included. Data were analyzed according to glomerular filtration rate in three strata: normal (>90 mL/min), mild CKD (60 to 89 mL/min), and moderate CKD (30 to 59 mL/min). End points comprised overall rate of mortality, acute myocardial infarction, and need for additional revascularization.**

Results. **Among patients with normal renal function (n = 270), 122 underwent CABG, 72 PCI, and 76 MT; among patients with mild CKD (n = 367), 167 underwent CABG, 92 PCI, and 108 MT; and among patients with moderate CKD (n = 126), 46 underwent CABG, 40 PCI, and 40 MT. Event-free survival was 80.4%, 75.7%, 67.5% for strata 1, 2, and 3, respectively ($p = 0.037$). Survival rates among patients with no, mild, and moderate CKD are 91.1%, 89.6%, and 76.2%, respectively ($p = 0.001$) (hazard ratio 0.69; 95% confidence interval 0.51 to 0.95; $p = 0.024$ for stratum 1 versus 3). We found no differences for overall number of deaths or acute myocardial infarctions irrespective of strata. The need of new revascularization was different in all strata, favoring CABG ($p < 0.001$, $p < 0.001$, and $p = 0.029$ for no, mild, and moderate CKD, respectively).**

Conclusions. **Mortality rates were higher in patients with mild and moderate CKD. Higher event-free survival was observed in the CABG group among patients with no and mild CKD. Besides, CABG was associated with less need for new revascularization compared with PCI and MT in all renal function strata. This trial was registered at http://www.controlled-trials.com as ISRCTN66068876.**

(Ann Thorac Surg 2016;■:■–■)
© 2016 by The Society of Thoracic Surgeons

Chronic kidney disease (CKD) affects approximately 13% of the population in the United States [1]. The relation between CKD and coronary artery disease (CAD) is well known; approximately one-half of the deaths in patients with terminal CKD is because of cardiovascular disease. Most patient deaths are attributed to CAD, leading to sudden death and acute coronary syndromes [1, 2].

Higher rates of cardiovascular disease mortality can be observed even in the initial stages of CKD [3], and this rate of mortality increases according to the progression of renal disease [4]. Moreover, patients with CAD with CKD have a worse prognosis than patients without CKD, despite the treatment option chosen for CAD [5].

The National Health and Nutrition Examination Surveys found that patients with glomerular filtration rate (GFR) of 60 to 90 mL/min per 1.73 m^2 had higher rates of cardiovascular disease mortality than patients with normal GFR rates [6]. Similarly, the Atherosclerosis Risk in the Communities study found that, when considered as a continuous variable, a drop of 10 mL/min per 1.73 m^2 in GFR was responsible for a 5% to 6% incremental increase in cardiovascular risk of death [7].

Trials to compare different treatment strategies for CAD among patients with CKD are lacking. Most studies are registry-based [8] or subanalyses from randomized clinical trials, such as MASS (Medicine, Angioplasty, or

Accepted for publication Oct 12, 2015.

Address correspondence to Dr Hueb, Av Dr Eneas de Carvalho Aguiar 44, AB, Sala 114, Cerqueira César, São Paulo-SP/Brazil 05403–000; e-mail: mass@incor.usp.br.

© 2016 by The Society of Thoracic Surgeons
Published by Elsevier

0003-4975/$36.00
http://dx.doi.org/10.1016/j.athoracsur.2015.10.036

Abbreviations and Acronyms

AMI = acute myocardial infarction
APPROACH = Alberta Provincial Project for Outcome Assessments in Coronary Heart Disease
BARI = Bypass Angioplasty Revascularization Investigation
BMS = bare metal stent
CABG = coronary artery bypass graft
CAD = coronary artery disease
CKD = chronic kidney disease
CO = confidence interval
DES = drug eluting stent
DM = diabetes mellitus
GFR = glomerular filtration rate
HR = hazard ratio
LVEF = left ventricular ejection fraction
MASS = Medicine, Angioplasty, or Surgery Study
MT = medical treatment
PCI = percutaneous coronary intervention

Surgery Study) II [5], BARI (Bypass Angioplasty Revascularization Investigation) [9], and ARTS (Arterial Revascularization Therapies Study) [10]. Results are conflicting, and there is no consensus for the best treatment option for CAD among the CKD population.

The prognosis can be worse when diabetes mellitus (DM) is associated with CAD and CKD. A substudy of the BARI trial observed a 7-year survival rate of 33% among patients with CKD and DM with CAD who underwent coronary artery bypass graft (CABG) or balloon angioplasty (percutaneous coronary intervention [PCI]) [9]. Note that this is a subset of patients with CAD with a poor prognosis, and prospective long-term studies that address the best treatment option for CAD in this population are lacking.

The objective of this study was to compare three different therapeutic strategies for multivessel CAD among diabetic patients stratified by renal function.

Material and Methods

Study Design and Definitions

This was a single center, prospective, registry-based study that enrolled patients from the MASS Group Database at the Heart Institute from the University of São Paulo. The MASS Registry comprises patients with CAD who were assessed by our study group after undergoing angiography and included before a decision about treatment and was an important part of the MASS II study design (MASS II registration number SRCTN66068876). For this specific study, patients with type 2 DM with multivessel CAD and normal ventricular function were allocated to one of the treatment options: CABG, PCI, or optimized medical therapy alone (MT) (Fig 1). Data were analyzed according to estimated GFR by the Cockcroft-Gault formula [11], leading to three strata: normal

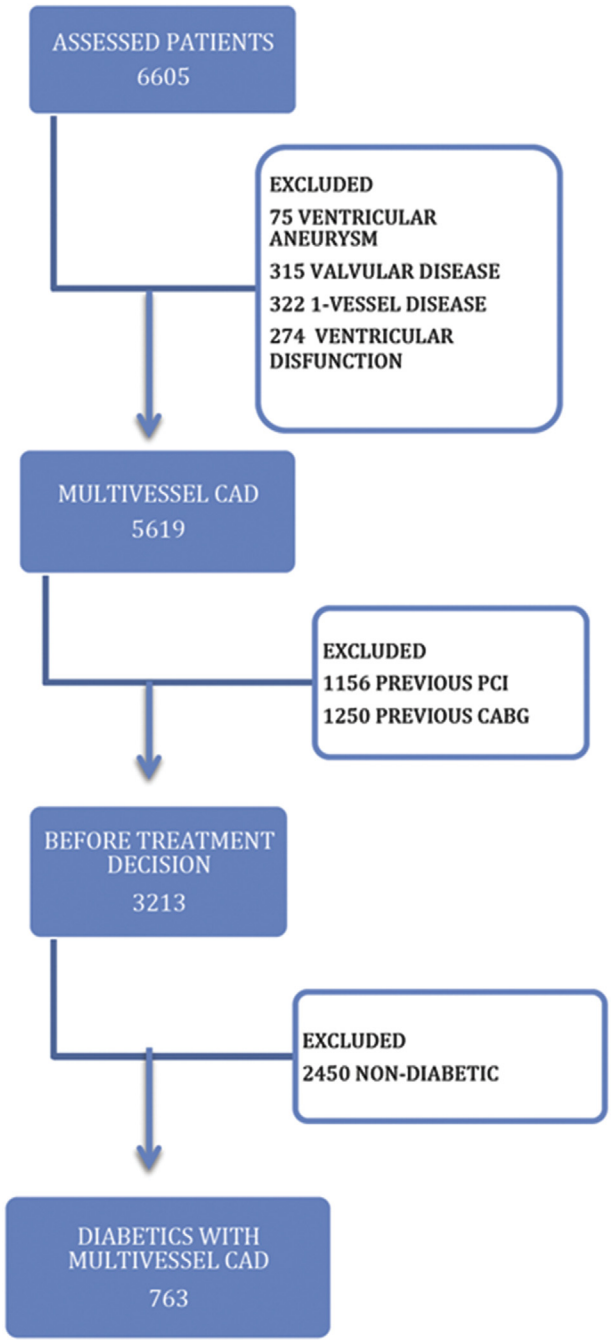

Fig 1. Study design. Flowchart showing selection of patients included in this study. (CABG = coronary artery bypass graft; CAD = coronary artery disease; PCI = percutaneous coronary intervention.)

(creatinine clearance: >90 mL/min), mild CKD (60 to 89 mL/min), and moderate CKD (30 to 59 mL/min). Type 2 DM was defined as the presence of serum glucose concentration ≥126 mg/dL on at least two separate occasions. We also considered as diabetic those patients with a previous diagnosis and taking specific medication. Those criteria are the most accepted definition for DM by the most recent specific guidelines [12]. We defined patients with multivessel CAD as those with stenosis >70% on

Download English Version:

https://daneshyari.com/en/article/2871149

Download Persian Version:

https://daneshyari.com/article/2871149

Daneshyari.com