

Letter to the Editor-in-Chief

Cardiovascular Rehabilitation in Patients With Diabetes

By Leonida Compostella, MD; Fabio Bellotto, MD; Nicola Russo, MD

DEAR EDITOR-IN-CHIEF,

We read with great interest the article by Mourot et al¹ concerning cardiovascular rehabilitation in patients with diabetes. The prevalence of diabetes in patients with coronary artery disease (CAD) is known to be around 31% across Europe (Euro Heart Study)²; thus, the evaluation of the physical performance of this group of patients after a period of cardiac rehabilitation (CR) is a stimulating topic and constitutes a daily issue in most CR units.

Mourot et al have focused on 2 aspects of CR in this kind of patients: (1) a multidisciplinary approach (including education) is needed and it has to be tailored to the specific needs of the individual patient and (2) cardiorespiratory fitness is an independent predictor of long-term cardiac mortality in patients with diabetes and CAD and interventions to modify the exercise capacity are relevant, as they could have a positive prognostic impact.

The great number of patients included in the study, the similarity of the 2 groups in terms of factors that influence exercise capacity and oxygen uptake (ie, age, sex, ejection fraction), and the accurate evaluation of the physical performance by cardiopulmonary exercise testing, the 6-minute walk test, and evaluation of hand strength make the conclusions of the study very significant. The authors demonstrate that in spite of a

higher prevalence of risk factors and a lower initial performance, patients with CAD and diabetes can fully benefit from a multidisciplinary program of CR.

However, we have concern about the methodology used for patient selection. The authors identified “normal” patients as those with a fasting blood glucose level of less than 126 mg/dL on 2 or more occasions and taking no diabetes medications. It is known that in patients considered “nondiabetic,” a percentage ranging as high as 51% to 58% presents with an abnormal glucose regulation (abnormal fasting blood glucose and/or impaired glucose tolerance)^{2,3}; thus, patients with truly normal glucose regulation constitute a minority of the population with CAD. The article by Mourot et al does not report the prevalence of a “prediabetic” status among the control group; consequently, it is possible that diabetic patients have been compared with a pool of patients including both normal and abnormal glucose regulation.

In 2006, Van de Veire et al⁴ reported a gradient of performance (maximal watts and maximum oxygen uptake reached at peak of exercise) in patients with CAD that was inversely related to the fasting blood glucose levels. Preliminary observations from our group of CAD patients⁵ confirm the observation of Van de Veire et al and support the hypothesis that patients with abnormal glucose regulation (even with nearly normal blood glucose levels) show lesser benefit after a 2-week period of CR than patients with normal glucose regulation. The different duration in the rehabilitation periods (6 weeks in the study of Mourot et al vs 14.8 ± 3.9 days in our observations) and the delay from the acute event (5.8 ± 2 weeks vs 7 ± 2 days) perhaps provide partial explanation for the differences between the results of the 2 studies.

It would be interesting to know whether Mourot et al have any data on the prevalence of a “prediabetic status” among their control group and the level of performance in such subgroup in comparison with

Author Affiliations: Cardiac Rehabilitation and Prevention Unit, Istituto Codivilla-Putti, Cortina d'Ampezzo (BL), Italy (Drs Compostella, Bellotto, and Russo); Department of Cardiac, Thoracic and Vascular Sciences, Cardiology Division, University of Padova, Padova, Italy (Drs Bellotto and Russo).

Correspondence: Leonida Compostella, MD, Cardiac Rehabilitation and Prevention Unit, Istituto Codivilla-Putti, Via di Codivilla 1, 32043 Cortina (BL), Italy (l.compostella@alice.it).

Sources of Support: Unconditional support by Istituto Codivilla-Putti (BL, Italy)

www.jcrjournal.com

Letter to the Editor-in-Chief E1

both patients with normal glucose tolerance and patients with diabetes. A prolonged period of multidisciplinary rehabilitative intervention could be needed to slowly modify an unfavorable metabolic milieu in diabetic and prediabetic patients.

References

1. Mouro L, Boussuges A, Maunier S, et al. Cardiovascular rehabilitation in patients with diabetes. *J Cardiopulm Rehab Prev.* 2010;30(3):157-164.
2. Bartnik M, Rydén L, Ferrari R, et al. The prevalence of abnormal glucose regulation in patients with coronary artery disease across Europe. The Euro Heart Survey on diabetes and the heart. *Eur Heart J.* 2004;25:1880-1890.
3. Lankish M, Füh R, Gülker H, et al. Screening for undiagnosed diabetes in patients with acute myocardial infarction. *Clin Res Cardiol.* 2008;97:753-759.
4. Van de Veire NR, De Winter O, Giri M, et al. Fasting blood glucose levels are related to exercise capacity in patients with coronary artery disease. *Am Heart J.* 2006;152:486-492.
5. Compostella L, Fadini GP, Russo N, et al. Alterazioni della regolazione glicemica non precedentemente note in soggetti coronaropatici e recupero funzionale in riabilitazione cardiologica. *G Ital Cardiol.* 2009;10(suppl 1):92S.