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SHORT COMMUNICATION

Diabetic patient with three-vessel disease and left main involvement. Surgery yes, but not always

Marouane Boukhris [a,b], Salvatore Azzarelli [a], Salvatore Davide Tomasello [a], Zied Ibn Elhadj [b], Francesco Marzà [a], Alfredo Ruggero Galassi [a,*]

[a] *Department of Medical Sciences and Pediatrics, Catheterization Laboratory and Cardiovascular Interventional Unit, Division of Cardiology, Cannizzaro Hospital, University of Catania, Italy*
[b] *Faculty of Medicine of Tunis, University Tunis El Manar, Tunisia*

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Abstract Coronary artery disease (CAD) is known to be the main cause of morbidity and mortality in patients with diabetes mellitus. Although they do not often show typical recognized symptoms, diabetic patients suffer from more extensive CAD and hence higher incidence of multi-vessel CAD than in non-diabetic subjects. Literature has given the strength of evidence in favor of surgical revascularization in diabetic patients with multi-vessel disease. We report the case of a 61-year old active smoker and diabetic man with atypical symptoms and positive treadmill test. The coronary angiography revealed a severe three-vessel disease and distal left main involvement (SYNTAX score = 49). As the patient refused to follow heart team indication to undergo coronary bypass grafting, a percutaneous coronary intervention was successfully performed with intra-aortic balloon counterpulsation support and intravascular ultrasound optimization. The mid-term outcome was good.

1. Introduction

The perceivable link between the coronary artery disease (CAD) and diabetes mellitus had been known for many years. The incidence of coronary artery disease (CAD) in diabetics is four times higher compared to the age-adjusted general population.[1] Furthermore, CAD is known to be the main cause of morbidity and mortality in patients with diabetes mellitus (DM).[2] Although they do not often show typical recognized symptoms, diabetic patients suffer from more extensive CAD and hence higher incidence of multi-vessel CAD than in non-diabetic subjects.[3] Multi-vessel coronary artery disease revascularization is commonly performed throughout the world. Among approximately 700,000 patients who undergo multivessel coronary revascularization yearly, 25% have diabetes.[2,4] For the last two decades, there has been intense debate between interventional cardiologists and surgeons regarding the most effective mode of revascularization in patients with diabetes,

* Corresponding author at: Via Antonello da Messina 75, Acicastello, 95021 Catania, Italy. Tel.: +39 095 7263122 3623; fax: +39 095 7263124 3633.
E-mail addresses: argalassi@virgilio.it, cardiocannizzaro@gmail.com (A.R. Galassi).
URL: http://www.alfredogalassi.com (A.R. Galassi).

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particularly in those with multivessel disease or left main stenosis,[5–8] until the FREEDOM trial gave the strength of evidence in favor of coronary artery bypass grafting (CABG).[9] However, surgical revascularization is not always feasible or accepted by all the patients. Otherwise, although single-center observational data had suggested a reduction in mortality and major complications with the use of an elective intra-aortic balloon pump (IABP) during high-risk PCI,[10,11] the first randomized controlled evaluation of the safety and efficacy of counterpulsation during high-risk PCI did not confirm these findings.[12]

2. Case report

A 61-year old, active smoker (1 peak per day since 40 years) with a history of non-insulin dependent DM for 10 years treated by 2 daily tablets of metformin, sought medical care for easy fatigue and chest discomfort on physical exertion since 10 years exacerbating since 3 months. Clinical examination was normal. Blood tests revealed a preserved renal function preserved (creatinine 0.98 mg/dl and clearance of creatinine 95 ml/mn), a glycosylated hemoglobin of 7.2% and his lipid profile showed a hypercholesterolemia of 6.9 mmol/l. No abnormalities were found in baseline12-lead electrocardiogram. The treadmill test showed ST depression of 4 mm

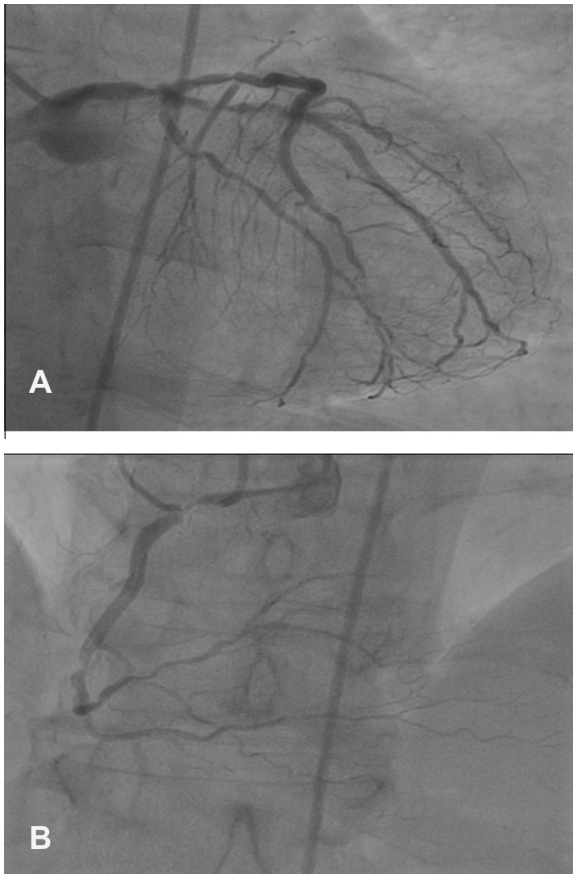

Figure 1 Coronary angiogram: (A) Left coronary angiogram: caudal view showing a distal left main stenosis associated with proximal LAD stenosis and stenosis of the proximal segment of first marginal branch. (B) Right coronary angiogram: cranial view showing a double tight stenosis of the first and the second segments of RCA.

concomitant to the same reported chest discomfort at the second step and the patient was admitted. Trans-thoracic echocardiography found a mildly impaired left ventricular function (ejection fraction 48%) with a moderate global hypokinesia. A coronary angiography was performed: left angiogram revealed calcified distal left main stenosis associated with proximal left anterior descending (LAD) stenosis and a stenosis of the proximal segment of first marginal branch; while right coronary angiogram showed a double tight stenosis of the first and the second segments of RCA (Fig. 1). Risk stratification was performed: operative risk was low with an additive EUROSCORE of 2, while a high SYNTAX score of 49 was found. Although the patient was clearly informed about the heart team decision to opt for surgical revascularization, he refused to undergo CABG; thus the decision to perform PCI was taken. A double femoral 7F access was performed. As considered as high-risk PCI, elective IABP was employed during the procedure. A 6 French Judkins right was engaged in RCA ostium and 2 everolimus-eluting stents (EES) were implanted. Then, a 7 French XB 4 guiding catheter was placed in the left main coronary artery and two guidewires were positioned in LAD and first marginal. After first marginal and proximal LAD angioplasties, a provisional T-stenting of left main was performed with the implantation of one EES. Intravascular ultrasound (IVUS) was employed to assess the apposition of left main stent and a post-dilation was required to optimize it. Final angiographic result was good. Fig. 2 describes the procedure details.

In-hospital stay was uneventful and the patient was discharged after 48 h with the following treatment: aspirin, ticagrelor (dual anti-platelet therapy for 1 year), rosuvastatin, enalapril and atenolol, and addressed to diabetologist for a better control of DM.

At 3 months, the patient was asymptomatic with a negative myocardial scintigraphy. An angiographic control is scheduled after 8 months from the procedure.

3. Discussion

Over the past decades, there has been an extraordinary growth in available modalities for diagnosing and treating CAD. This has resulted in significant decline in the mortality caused by CAD during this period of time.[13,14] Unfortunately, for reasons that are not completely understood, this decline has not been appreciated to the same degree by diabetic patients.[15] The thought that patients with diabetes often have more severe forms of CAD, gives intuitively the impression that they are likely to derive greater clinical benefit from CABG than from PCI. The debate started with the BARI trial which revealed a survival advantage for the subgroup of patients with diabetes treated by CABG rather than angioplasty,[8] and was confirmed in the final 10-year follow-up with respective survival rates of 58% vs 46% ($p = 0.025$).[16] The publications of the 5-year outcomes of the SYNTAX Trial[17] and the ASCERT registry[18] have shown strong evidence that CABG, in comparison with PCI, provides a strong survival benefit as well as a marked reduction in myocardial infarction and repeat revascularization in patients with intermediate and more severe CAD as assessed by SYNTAX scores of >22. The FREEDOM trial randomized 1900 patients with diabetes and multivessel CAD, already receiving aggressive medical therapy, to CABG